

# [MC-EDMX]: Entity Data Model for Data Services Packaging Format

---

## Intellectual Property Rights Notice for Open Specifications Documentation

- **Technical Documentation.** Microsoft publishes Open Specifications documentation for protocols, file formats, languages, standards as well as overviews of the interaction among each of these technologies.
- **Copyrights.** This documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you may make copies of it in order to develop implementations of the technologies described in the Open Specifications and may distribute portions of it in your implementations using these technologies or your documentation as necessary to properly document the implementation. You may also distribute in your implementation, with or without modification, any schema, IDL's, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the Open Specifications.
- **No Trade Secrets.** Microsoft does not claim any trade secret rights in this documentation.
- **Patents.** Microsoft has patents that may cover your implementations of the technologies described in the Open Specifications. Neither this notice nor Microsoft's delivery of the documentation grants any licenses under those or any other Microsoft patents. However, a given Open Specification may be covered by Microsoft's Open Specification Promise (available here: <http://www.microsoft.com/interop/osp>) or the Community Promise (available here: <http://www.microsoft.com/interop/cp/default.mspx>). If you would prefer a written license, or if the technologies described in the Open Specifications are not covered by the Open Specifications Promise or Community Promise, as applicable, patent licenses are available by contacting [iplg@microsoft.com](mailto:iplg@microsoft.com).
- **Trademarks.** The names of companies and products contained in this documentation may be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights.
- **Fictitious Names.** The example companies, organizations, products, domain names, e-mail addresses, logos, people, places, and events depicted in this documentation are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

**Reservation of Rights.** All other rights are reserved, and this notice does not grant any rights other than specifically described above, whether by implication, estoppel, or otherwise.

**Tools.** The Open Specifications do not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments you are free to take advantage of them. Certain Open Specifications are intended for use in conjunction with publicly available standard specifications and network programming art, and assumes that the reader either is familiar with the aforementioned material or has immediate access to it.

## Revision Summary

Date	Revision History	Revision Class	Comments
02/27/2009	0.1	Major	First Release.
04/10/2009	0.1.1	Editorial	Revised and edited the technical content.
05/22/2009	0.1.2	Editorial	Revised and edited the technical content.
07/02/2009	0.1.3	Editorial	Revised and edited the technical content.
08/14/2009	0.1.4	Editorial	Revised and edited the technical content.
09/25/2009	0.2	Minor	Updated the technical content.
11/06/2009	0.2.1	Editorial	Revised and edited the technical content.
12/18/2009	0.2.2	Editorial	Revised and edited the technical content.
01/29/2010	0.2.3	Editorial	Revised and edited the technical content.
03/12/2010	1.0	Major	Updated and revised the technical content.
04/23/2010	1.0.1	Editorial	Revised and edited the technical content.
06/04/2010	1.0.2	Editorial	Revised and edited the technical content.
07/16/2010	2.0	Major	Significantly changed the technical content.
08/27/2010	2.0	No change	No changes to the meaning, language, or formatting of the technical content.
10/08/2010	3.0	Major	Significantly changed the technical content.
11/19/2010	3.0.1	Editorial	Changed language and formatting in the technical content.
01/07/2011	4.0	Major	Significantly changed the technical content.
02/11/2011	4.0	No change	No changes to the meaning, language, or formatting of the technical content.

# Contents

<b>1 Introduction</b> .....	<b>4</b>
1.1 Glossary .....	4
1.2 References .....	4
1.2.1 Normative References .....	4
1.2.2 Informative References .....	4
1.3 Overview .....	5
1.4 Relationship to Protocols and Other Structures .....	5
1.5 Applicability Statement .....	5
1.6 Versioning and Localization .....	5
1.7 Vendor-Extensible Fields .....	5
<b>2 Structures</b> .....	<b>7</b>
2.1 <edm:Edmx> .....	7
2.2 <edm:DataServices> .....	7
<b>3 Structure Examples</b> .....	<b>9</b>
<b>4 Security</b> .....	<b>11</b>
<b>5 Appendix A: Product Behavior</b> .....	<b>12</b>
<b>6 Change Tracking</b> .....	<b>13</b>
<b>7 Index</b> .....	<b>14</b>

# 1 Introduction

This document specifies the Entity Data Model for Data Services Packaging Format (EDMX), an XML-based file format that serves as the packaging format for the service metadata of a **Data Service**.

Data Services are specified in [\[MS-ODATA\]](#). The **Entity Data Model (EDM)** and the EDM conceptual **schemas** are specified in [\[MC-CSDL\]](#).

## 1.1 Glossary

The following terms are defined in [\[MS-GLOS\]](#):

### **.NET Framework schema**

The following terms are defined in [\[MC-CSDL\]](#):

### **Entity Data Model (EDM)**

The following terms are defined in [\[MS-ODATA\]](#):

### **data service**

The following terms are specific to this document:

**MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:** These terms (in all caps) are used as specified in [\[RFC2119\]](#). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

## 1.2 References

### 1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com). We will assist you in finding the relevant information. Please check the archive site, <http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624>, as an additional source.

[MC-CSDL] Microsoft Corporation, "[Conceptual Schema Definition File Format](#)", February 2009.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.ietf.org/rfc/rfc2119.txt>

[XMLSCHEMA1] Thompson, H.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/>

### 1.2.2 Informative References

[MS-GLOS] Microsoft Corporation, "[Windows Protocols Master Glossary](#)", March 2007.

[MS-ODATA] Microsoft Corporation, "[Open Data Protocol \(OData\) Specification](#)", January 2011.

## 1.3 Overview

An Entity Data Model for Data Services Packaging Format (EDMX) document is an XML-based file format that serves as the packaging format for the service metadata of a Data Service.

As specified in [\[MS-ODATA\]](#), clients can obtain the service metadata for a Data Service with a URI of the following signature.

```
http://<host>/<prefix>/<service path>/$metadata
```

The Data Service returns service metadata packaged in an EDMX document. The root of an EDMX document is an `<edm:Edmx>` element, which contains exactly one `<edm:DataServices>` subelement. The `<edm:DataServices>` subelement contains zero or more `<Schema>` subelements, which specify Entity Data Model (EDM) Conceptual schemas. These EDM conceptual schemas are annotated as specified in [\[MS-ODATA\]](#).

Conceptually, the structure of an EDMX document resembles the following example.

```
<edm:Edmx>
  <edm:DataServices>
    <!-- Entity Data Model Conceptual Schemas, as specified in
         [MC-CSDL] and annotated as specified in [MS-ODATA] -->
    <Schema>

    </Schema>
    <!--
         Additional Entity Data Model Conceptual Schemas as
         specified in [MC-CSDL] and annotated as specified in [MS-ODATA]
    -->
  </edm:DataServices>
</edm:Edmx>
```

The contents of an EDMX document are completely determined by the Data Service in question and will vary depending on the Data Service, as specified in [\[MS-ODATA\]](#).

## 1.4 Relationship to Protocols and Other Structures

EDMX serves as the packaging format of the metadata of a Data Service (as specified in [\[MS-ODATA\]](#)).

## 1.5 Applicability Statement

An EDMX document is used when clients of a Data Service (as specified in [\[MS-ODATA\]](#)) require the metadata of the Data Service.

## 1.6 Versioning and Localization

This document specifies version 1.0 of EDMX.

## 1.7 Vendor-Extensible Fields

An EDMX document does not contain any vendor extensible fields, nor does it support extensibility. However, EDM conceptual schemas packaged in an EDMX document support an extension

mechanism through the use of Annotations (AnnotationAttribute and AnnotationElement), as specified in [\[MC-CSDL\]](#).

Parsers of EDMX documents ignore content which is unexpected or cannot be parsed.

## 2 Structures

### 2.1 <edmx:Edmx>

The <edmx:Edmx> element defines the XML namespace for the EDMX document and contains the <edmx:DataServices> sub-element.

```
<edmx:Edmx Version="1.0" xmlns:edmx="http://schemas.microsoft.com/ado/2007/06/edmx">
```

The following rules apply to the <edmx:Edmx> element.

- An EDMX document MUST have exactly one <edmx:Edmx> element as its root element.
- The Version attribute MUST be defined on the <edmx:Edmx> element. Version is of type <xs:string>, as specified in the XML schema [\[XMLSCHEMA1\]](#).
- The <edmx:Edmx> element MUST contain exactly one <edmx:DataServices> sub-element.

Element	<edmx:Edmx>		
Attributes	Name	Required	
	Version	Yes	
Sub elements	Name	Occurrence	
		Min	Max
	DataServices	1	1

**Figure 1: Format of an <edmx:Edmx> element**

### 2.2 <edmx:DataServices>

The <edmx:DataServices> element contains the service metadata of a Data Service. This service metadata contains zero or more EDM conceptual schemas (as specified in [\[MC-CSDL\]](#)), which are annotated as specified in [\[MS-ODATA\]](#).

Example:

```
<edmx:DataServices>
```

The following rules apply to the <edmx:DataServices> element:

- The <edmx:Edmx> element MUST have exactly one <edmx:DataServices> sub-element.
- The <edmx:DataServices> element MAY contain zero or more <Schema> sub-elements. [<1>](#)

<b>Element</b>	<edm:DataService>		
<b>Sub elements</b>	Name	Occurrence	
		Min	Max
	Schema	0	Unbounded

**Figure 2: Format of an <edm:DataService> element**



### 3 Structure Examples

The following is an example the service metadata returned by a Data Service. The <edmx:Edmx> and <edmx:DataServices> elements are specified in sections [2.1](#) and [2.2](#) of this document; all other XML elements are specified in [\[MC-CSDL\]](#) and [\[MS-ODATA\]](#).

```
<edmx:Edmx Version="1.0" xmlns:edmx="http://schemas.microsoft.com/ado/2007/06/edmx">
  <edmx:DataServices>
    <Schema Namespace="NorthwindModel"
      xmlns:d="http://schemas.microsoft.com/ado/2007/08/dataservices"
      xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata"
      xmlns="http://schemas.microsoft.com/ado/2006/04/edm">
      <EntityContainer Name="NorthwindEntities" m:IsDefaultEntityContainer="true">
        <EntitySet Name="OrderDetails" EntityType="NorthwindModel.OrderDetail" />
        <EntitySet Name="Orders" EntityType="NorthwindModel.Order" />
        <AssociationSet Name="OrderDetails_Orders"
          Association="NorthwindModel.OrderDetails_Orders">
          <End Role="Orders" EntitySet="Orders" />
          <End Role="OrderDetails" EntitySet="OrderDetails" />
        </AssociationSet>
      </EntityContainer>
      <EntityType Name="OrderDetail">
        <Key>
          <PropertyRef Name="OrderID" />
          <PropertyRef Name="ProductID" />
        </Key>
        <Property Name="Discount" Type="Edm.Single" Nullable="false" />
        <Property Name="OrderID" Type="Edm.Int32" Nullable="false" />
        <Property Name="ProductID" Type="Edm.Int32" Nullable="false" />
        <Property Name="Quantity" Type="Edm.Int16" Nullable="false" />
        <Property Name="UnitPrice" Type="Edm.Decimal" Nullable="false" Precision="19"
          Scale="4" />
        <NavigationProperty Name="Order" Relationship="NorthwindModel.OrderDetails_Orders"
          FromRole="OrderDetails" ToRole="Orders" />
      </EntityType>
      <EntityType Name="Order">
        <Key>
          <PropertyRef Name="OrderID" />
        </Key>
        <Property Name="CustomerID" Type="Edm.String" Nullable="true" MaxLength="5"
          Unicode="true" FixedLength="true" />
        <Property Name="OrderDate" Type="Edm.DateTime" Nullable="true" />
        <Property Name="OrderID" Type="Edm.Int32" Nullable="false" />
        <Property Name="ShipAddress" Type="Edm.String" Nullable="true" MaxLength="60"
          Unicode="true" FixedLength="false" />
        <NavigationProperty Name="OrderDetails"
          Relationship="NorthwindModel.OrderDetails_Orders" FromRole="Orders" ToRole="OrderDetails" />
      </EntityType>
      <Association Name="OrderDetails_Orders">
        <End Role="Orders" Type="NorthwindModel.Order" Multiplicity="1" />
        <End Role="OrderDetails" Type="NorthwindModel.OrderDetail" Multiplicity="*" />
        <ReferentialConstraint>
          <Principal Role="Orders">
            <PropertyRef Name="OrderID" />
          </Principal>
          <Dependent Role="OrderDetails">
            <PropertyRef Name="OrderID" />
          </Dependent>
        </ReferentialConstraint>
      </Association>
    </Schema>
  </edmx:DataServices>
</edmx:Edmx>
```

```
        </ReferentialConstraint>
    </Association>
</Schema>
</edm:DataServices>
</edm:Edmx>
```

## 4 Security

None.

## 5 Appendix A: Product Behavior

This document specifies version-specific details in the Microsoft® .NET Framework. For information about which versions of .NET Framework are available in each released Microsoft Windows® product or as supplemental software, see [.NET Framework](#).

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:

- Microsoft® .NET Framework 3.5 Service Pack 1 (SP1)
- Microsoft® .NET Framework 4.0

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

[<1> Section 2.2:](#) Microsoft implementations always have at least one <Schema> sub-element.

## 6 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

## 7 Index

### A

[Applicability](#) 5

[Vendor-extensible fields](#) 5  
[Versioning](#) 5

### C

[Change tracking](#) 13

### E

[edm:DataServices element](#) 7

[edm:Edmx element](#) 7

[Examples - overview](#) 9

### F

[Fields - vendor-extensible](#) 5

### G

[Glossary](#) 4

### I

[Informative references](#) 4

[Introduction](#) 4

### L

[Localization](#) 5

### N

[Normative references](#) 4

### O

[Overview \(synopsis\)](#) 5

### P

[Product behavior](#) 12

### R

References

[informative](#) 4

[normative](#) 4

[Relationship to protocols and other structures](#) 5

### S

[Security](#) 11

### T

[Tracking changes](#) 13

### V